Four new species of Muricidae (Gastropoda) from New Caledonia, Papua New Guinea, and Indonesia

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ABSTRACT

Four new species of Muricidae are described from New Caledonia, Papua New Guinea and Indonesia and compared with related species. One *Timbellus* species was collected in New Caledonia. Two other species are described from Papua New Guinea, respectively in *Chicopinnatus* and *Dermomurex*. The fourth species, also belonging in *Chicopinnatus*, originates from Indonesia.

Additional Keywords: Muricoidea, *Chicoreus*, *Timbellus*, *Dermomurex*

INTRODUCTION

Many species have been traditionally classified in *Pterynotus* Swainson, 1833 and 16 species are currently considered as valid for this genus in WoRMS (Bouchet et al., 2015). However, according to recent molecular research (Barco et al., 2010), *Pterynotus* as traditionally defined (Vokes, 1964; 1971; Fair, 1976; Radwin and D'Attilio, 1976; Houart, 1994), appears to be polyphyletic consisting of at least two independent lineages. One group includes all the species with a sculptural pattern similar to the type species of *Pterynotus*, *P. alatus* (Röding, 1798) (= *Murex pinnatus* Swainson, 1822). A second group, based on the position in the molecular phylogeny of *P. fulgens* Houart, 1988, includes species generally classified in *Pterynotus* sensu stricto, but with a less scabrous shell sculpture and with three major axial varices "appearing early during the ontogeny" (Merle et al., 2011). The genus *Timbellus* was reinstated by Merle et al. (2011) to include the species that were formerly classified in *Pterynotus* but which differ in having a trivaricate smooth rather than scabrous shell.

Eight species of *Timbellus* species are known from the New Caledonian area, six of them originally described in *Pterynotus* (Houart, 1987; 1988; 1991; 2001). Two additional species, formerly confused with *Timbellus richeri* (Houart, 1986), were recently separated and described as new *Timbellus* species (Houart, 2012). A ninth species is described here.

Species of *Chicopinnatus* Houart, 1992, a subgenus of *Chicoreus*, have been variously classified in *Pterynotus* sensu stricto and other genera. *Chicopinnatus* originally included three species: *Chicoreus* (*Chicopinnatus*) *orchidiflorus* (Shikama, 1973) (type species), *C.* (*C.*) *laqueatus* (Sowerby, 1841) and *C.* (*C.*) *guillei* (Houart, 1985). Different shell characters separate them from other genera and from *Chicoreus* sensu stricto. In this article, three additional species formerly included in *Pterynotus* or in *Timbellus* are added to *Chicopinnatus* and two new species are described from Papua New Guinea and Indonesia.

Dermomurex Monterosato, 1890 was organized by Vokes (1976) into five subgenera: *Dermomurex*, *Gracilimurex* Thiele, 1929, *Takia* Kuroda, 1953, *Trialatella* Berry, 1964, and *Viator* Vokes, 1974. All these but *Gracilimurex* occur in the Indo-West Pacific. A new species from Papua New Guinea is described here but its classification in *Dermomurex* sensu stricto or *D.* (*Trialatella*) is doubtful, as it shares shell characters of both subgenera. The new species is described without allocation to a subgenus.

MATERIALS AND METHODS

The material in this paper originates from four sources. (1) The PAPUA NIUGINI expedition (Principal Investigator: Philippe Bouchet) conducted by MNHN and Pro-Natura International (PNI) as part of the *Our Planet Reviewed* program; its sponsors include the Total Foundation, Prince Albert II of Monaco Foundation, Stavros Niarchos Foundation, Fondation EDF, and Entrepose Contracting. The project operated under a Memorandum of Understanding between MNHN and the University of Papua New Guinea, with permits from the PNG Department of Environment and Conservation. The expedition took place along the coast of New Guinea Island in the Bismarck Sea, from the Vitiaz Strait to the border between Papua New Guinea and Irian Jaya; (2) The EXBODI

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cruise (Principal Investigator: Sarah Samadi) as part of the *Tropical Deep-Sea Benthos* program conducted by MNHN and Institut de Recherche pour le Développement (IRD); (3) The MUSORSTOM 4 cruise (Principal Investigator: Bertrand Richer de Forges), in northern and southern New Caledonia. Leg one of the latter expedition took place between 12 September and 5 October 1985 off northern and southern New Caledonia. Leg two took place between 13 September and 01 Oetober 2011 and explored seamounts of the Loyalty Ridge; (4) One additional new species originates from the personal collection of Bunjamin Dharma, Indonesia.

The new species descriptions are based on all the examined specimens. The characters used to describe the shell morphology are the general aspect of the shell, its shape and size, color, shape of the spire and number of protoconch and teleoconch whorls, features of the protoconch, shape of the teleoconch whorls and features or form of the suture and of the subsutural band, of axial and spiral sculpture, the aperture and siphonal canal. When known, the characters of the operculum are also used.

All width measurements are taken with the spines included. Abbreviations are: DW: Warén dredge; IRD: Institut de Recherche pour le Développement (formerly ORSTOM); ORSTOM: Office de la Recherche Scientifique et Technique d'Outre Mer (now IRD); Collection abbreviations are: MNHN: Muséum national d'Histoire naturelle, Paris, France; MZB: Museum Zoologicum Bogoriense, Bogor, Java, Indonesia; RH: collection of the author; ZSM: Zoologischen Staatssammlung, München, Germany; Specimen status: dd: empty shell(s); juv: juvenile; lv: live collected.

Terminology used to describe the spiral cords and apertural denticles, listed according to type of structure (after Merle, 2001 and 2005) (Terminology in parentheses: variable feature) (Figures 1–5): **P:** primary cord; **s:** secondary cord; **t:** tertiary cord; **ad:** adapical; **ab:** abapical; **IP:** infrasutural primary cord (primary cord on subsutural ramp); **adis:** adapical infrasutural secondary cord (on subsutural ramp); **abis:** abapical infrasutural secondary cord (on subsutural ramp); **P1:** shoulder cord; **P2–P6:** primary cords of the convex part of the teleoconch whorl; **s1–s6:** secondary cords of the convex part of the teleoconch whorl; example: s1 = secondary cord between P1 and P2; s2 = secondary cord between P2 and P3, etc.; **ADP:** adapertural primary cord on the siphonal canal; **MP:** median primary cord on the siphonal canal; **ABP:** abapertural primary cord on the siphonal canal; **abs:** abapertural secondary cord on the siphonal canal; **Aperture, D1 to D6:** abapieal denticles; **ID:** Infrasutural denticle.

SYSTEMATICS

Family Muricidae Rafinesque, 1815
Subfamily Muricinae Rafinesque, 1815

Genus *Timbellus* de Gregorio, 1885

Type Species: *Murex latifolius* Bellardi, 1872, Middle Miocene, Italy (subsequent designation by Vokes, 1964: 14)

Timbellus corbariae new species
(Figures 1–2, 6–11)

Description: Shell medium sized for the genus, up to 39.6 mm in length at maturity (holotype). Length/width ratio of the holotype 1.56. Last whorl slender, triangular with variceal wings, whorls narrow, almost smooth, lightly built. Subsutural ramp broad, strongly sloping, weakly concave.

Light creamy white with scattered brown blotches on whorls and varices, more particularly visible in paratype. Aperture white. Spire high, acute, with 7 narrowly convex, weakly shouldered, almost smooth, teleoconch whorls. Suture impressed. Protoconch broken in the two specimens. Axial sculpture of teleoconch whorls consisting of 3 narrow, strongly webbed varices. Each varix bearing very thin, almost smooth, wing-like expansion from first to last whorl. Other axial sculpture of 2 or 3 narrow, nodose, intervariceal ribs, from suture to suture. Last whorl with 3 very low, narrow ribs, middle one weakly higher. Spiral sculpture of very weak, narrow, smooth, barely visible primary and secondary cords, most obvious on abapertural side of variceal wings. Paratype with P1–P3 visible from second whorl. Last whorl with adis, IP, abis, P1–P6, s6. No visible cords on siphonal canal.

Aperture small, ovate. Columellar lip moderately broad, smooth, adherent at adapical extremity. Anal notch deep, broad. Outer lip weakly erect, smooth with 7 strong, weakly elongate denticles within: ID, D1–D6, decreasing abapically in height and strength. Siphonal canal long, broad, straight, strongly dorsally bent at tip, with variceal wing over whole length, smooth. Operculum and radula unknown.

Type Material: Holotype MNHN IM-2000-30342 and 1 paratype MNHN (as listed below).

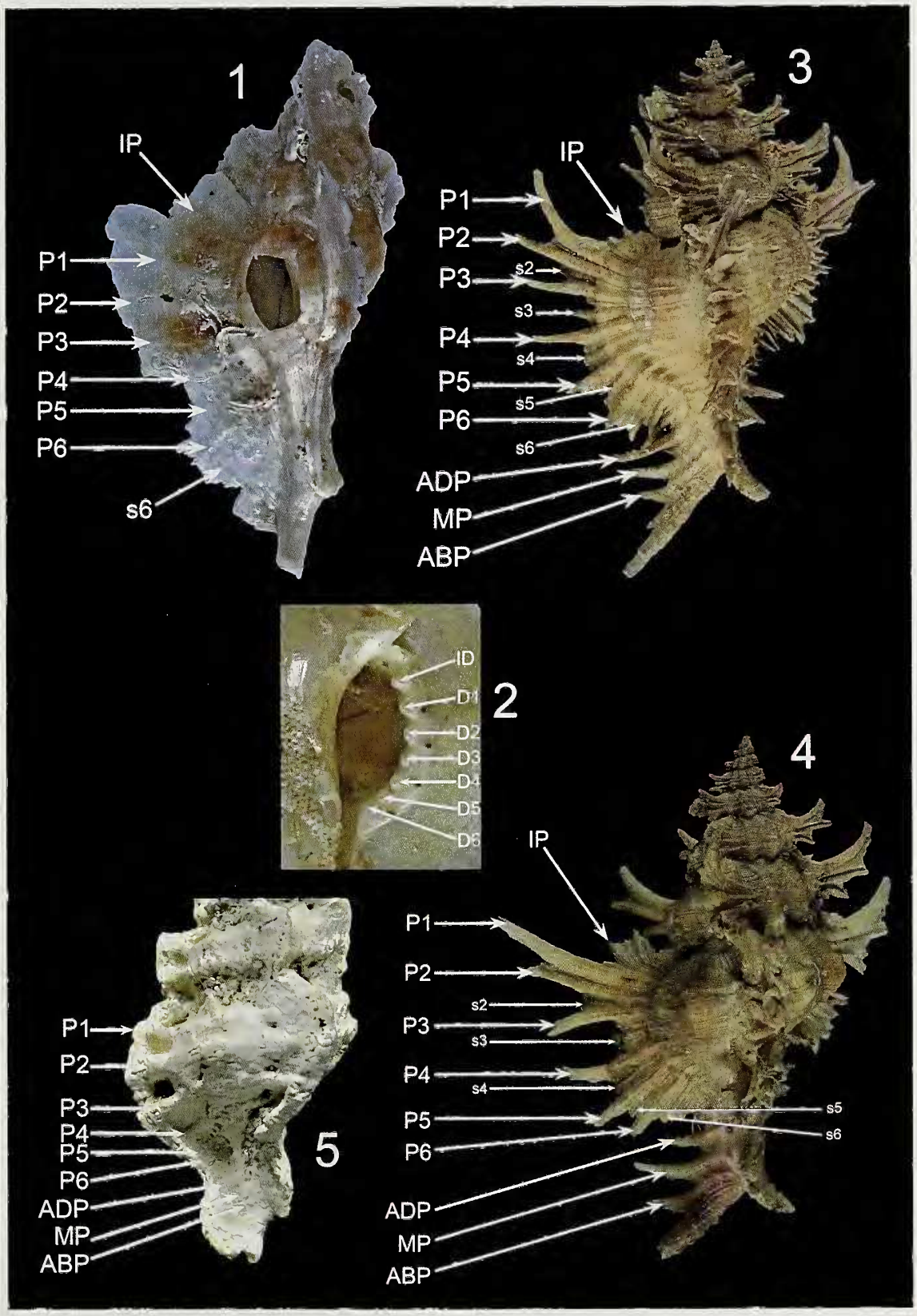
Other Material Examined: New Caledonia: EXBODI, stn DW3857, South Durand Bank, 22°18′ S, 168°42′ E, 342 m, 14 September 2011 (holotype) (dd); MUSORSTOM 4, stn DW205, 22°38′ S, 167°07′ E, 140–160 m, 27 September, 1985, 1 paratype MNHN IM-2000-30343 (dd).

Type Locality: New Caledonia, South Durand Bank, 22°18′ S, 168°42′ E, 342 m.

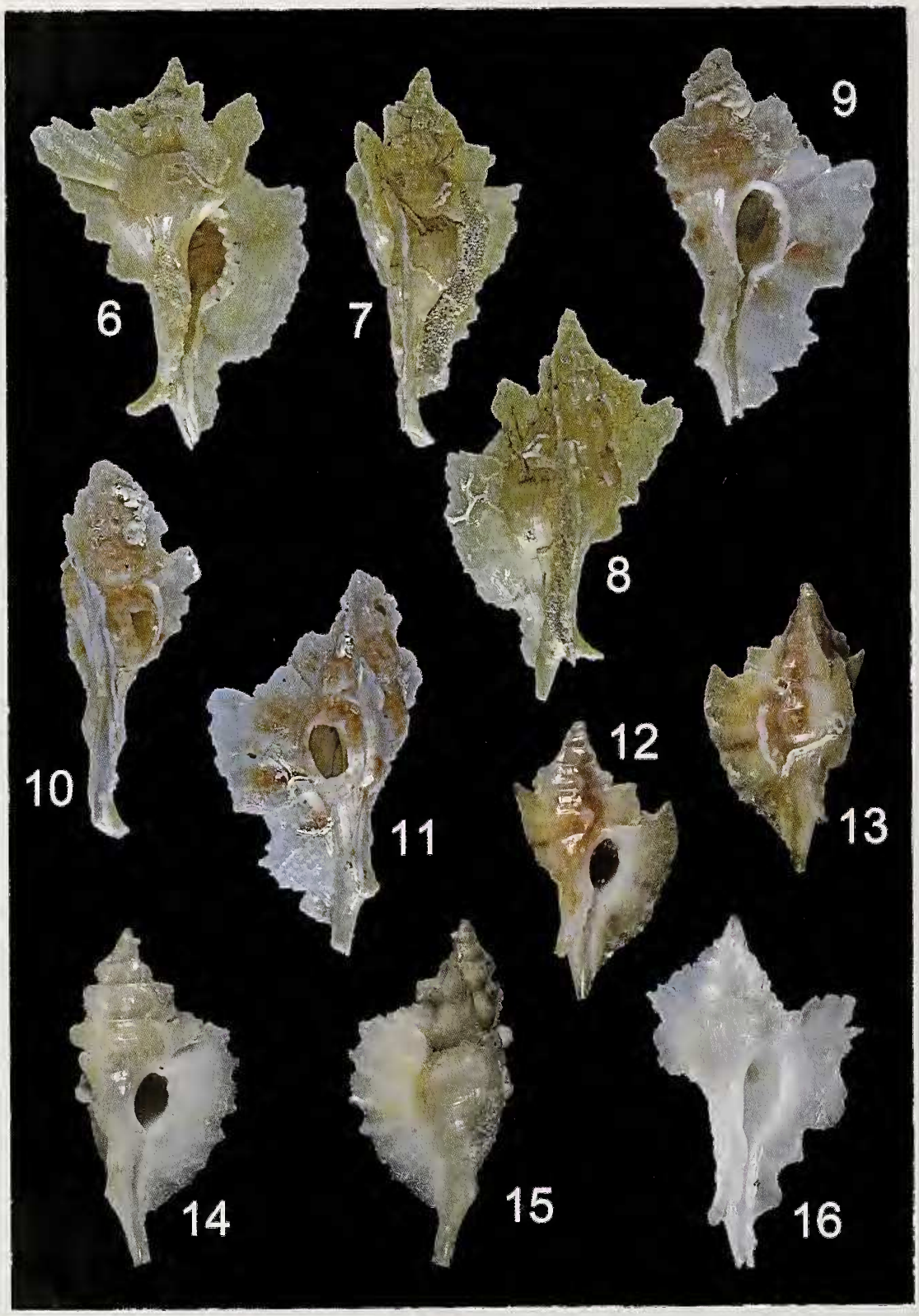
Distribution: South of New Caledonia, empty shells in 160–342 m.

Remarks. Eight species of *Timbellus* occur off New Caledonia and in the Coral Sea, living in deep water, mostly between 200 to 400 m. Only two of these can be reasonably compared with the new species.

Timbellus corbariae new species differs from *T. rubidus* Houart, 2001 (Figures 12–13) in having a larger shell. *Timbellus corbariae* has two additional teleoconch whorls,



Figures 1–5. New species of *Timbellus* and *Chicoreus*. Morphology of spiral cords and apertural denticles. **1–2. *Timbellus corbariae* new species. 1.** Paratype MNHN IM-2000-30343. **2.** Holotype MNHN IM-2000-30342. **3. *Chicoreus* (*Chicopinnatus*) *arbaguil* new species.** Holotype MNHN-IM-2013-14388. **4. *Chicoreus* (*Chicopinnatus*) *dharmai* new species. 5.** *Dermomurex fitialeatai* new species. Holotype MNHN IM-2013-14300.



Figures 6–16. Species of *Timbellus*. **6–11. *Timbellus corbariae* new species. 6–8.** New Caledonia. EXBODI, stn DW3857, South Durand Bank, 22°18′ S, 168°42′ E, 342 m, holotype MNHN IM-2000-30342, 39.6 mm. **9–11.** New Caledonia, MUSORSTOM 4, stn DW205, 22°38′ S, 167°07′ E, 140–160 m, paratype MNHN IM-2000-30343, 36.5 mm. **12–13.** *Timbellus rubidus* (Houart, 2001). New Caledonia, Norfolk Ridge, 23°44′ S, 168°16′ E, 394–401 m, holotype MNHN-IM-2000-0346, 13.2 mm (photos MNHN). **14–15.** *Timbellus fulgens* (Houart, 1988). New Caledonia, 390–420 m, 22°52′ S - 167°12′ E, holotype MNHN-IM-2000-0082, 25.5 mm (photos MNHN). **16.** *Timbellus flemingi* (Beu, 1967). Norfolk Ridge, north of Norfolk Island, 750–774 m, RH, 28.7 mm.

which could explain its larger size, but the whorls are also larger and broader and have 2 or 3 low, narrow and elongate intervariceal ridges instead of a single, obvious, small node in *T. rubidus*, from first to last teleoconch whorl. The aperture in *T. corbariae* is also comparatively larger and broader and the spiral cords are obviously narrower and shallower on the variceal wings.

Timbellus corbariae differs from *T. fulgens* (Houart, 1988) (Figures 14–15) in having a larger shell and a comparatively larger aperture with more obvious, high, apertural denticles and in having 2 or 3 low intervariceal elongate ridges instead of an almost smooth shell in *T. fulgens*.

A third similar species is *T. flemingi* (Beu, 1967) (Figure 16) from New Zealand. *Timbellus corbariae* differs in having a more elongate shell instead of strongly biconical in *T. flemingi* and in having a higher spire. *Timbellus corbariae* differs further in having a broader aperture that is denticulate instead of almost or entirely smooth, and in having two or three intervariceal elongate nodes instead of a single low node or none.

Etymology: Named for Laure Corbari (MNHN), chief scientist during the second leg of the EXBODI campaign (13/9 to 01/10/2011) when the holotype was collected.

Genus *Chicoreus* Monfort, 1810

Subenus *Chicopinnatus* Houart, 1992

Type Species: *Pterynotus orchidiflorus* Shikama, 1972, Indo-West Pacific (original designation).

Remarks: Three species are currently included in this subgenus: *Chicoreus* (*Chicopinnatus*) *orchidiflorus* (Shikama, 1972) (Figures 49–50), *C.* (*C.*) *guillei* (Houart, 1985), and *C.* (*C.*) *laqueatus* (Sowerby, 1841).

Five additional species are added here: *C.* (*C.*) *brianbaileyi* (Mühlhäusser, 1984), *C.* (*C.*) *loebbeckei* (Kobelt, 1879), *C.* (*C.*) *miyokoae* (Kosuge, 1979), *C.* (*C.*) *arbaguil* new species and *C.* (*C.*) *dharmai* new species.

Chicoreus (*Chicopinnatus*) *miyokoae* was tentatively included in *Timbellus* (Merle et al., 2011: 133) and *C.* (*C.*) *brianbaileyi* in *Pterynotus* (Merle et al., 2011: 121). Both species are similar in shell morphology and, together with *C. loebbeckei* and the two new species described here, share similar shell characters with *Chicopinnatus*, such as the rounded or roundly ovate aperture, the moderately long, spined siphonal canal, the more or less webbed variceal spines and the trivaricate morphology starting from first teleoconch whorl.

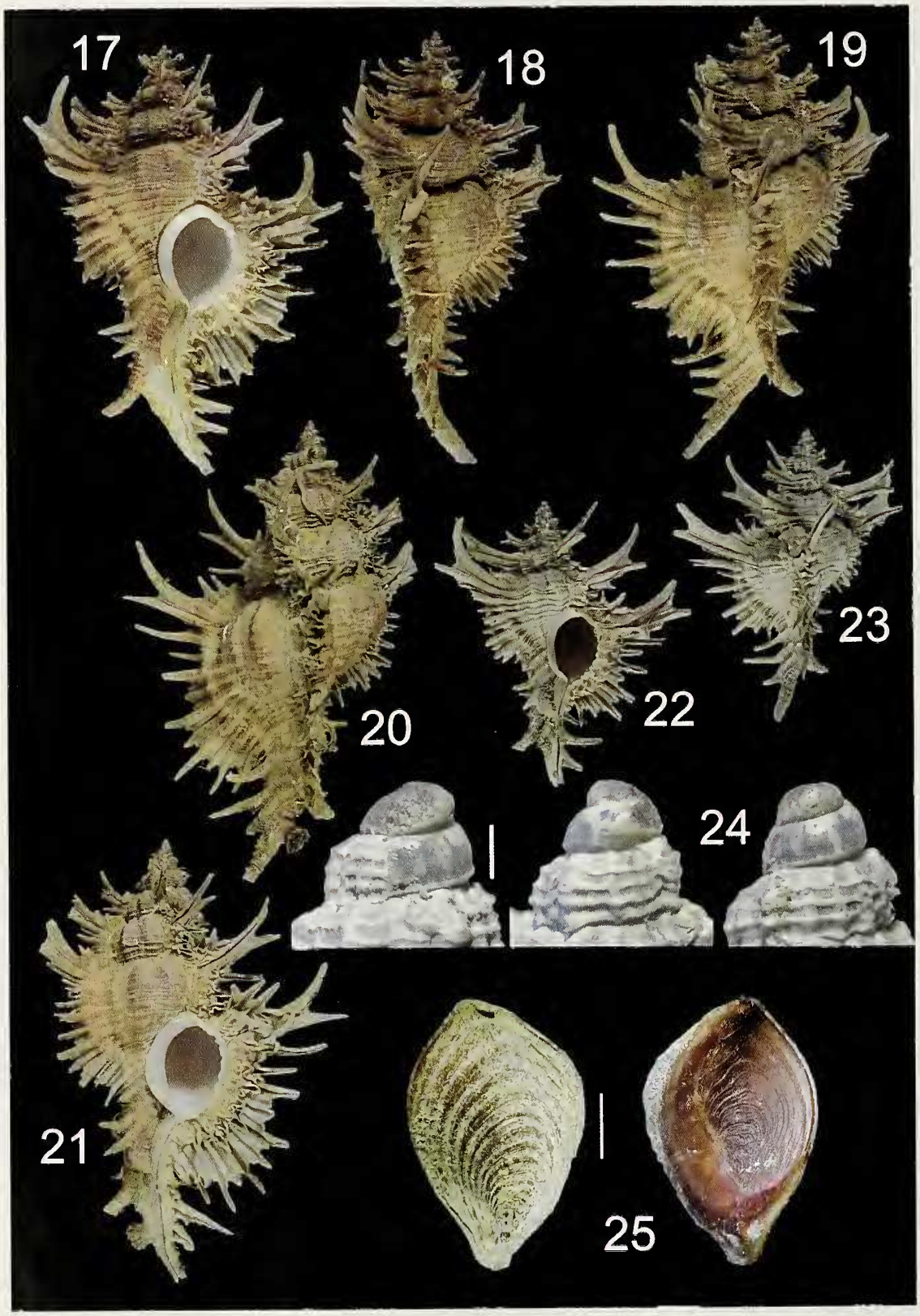
Chicopinnatus species differ from *Pterynotus alatus* (Röding, 1798) (= *Murex pinnatus* Swainson, 1822), the type species of the genus *Pterynotus* and from *P. albobrunneus* Bertsch and D'Attilio, 1980, *P. elongatus* (Lightfoot, 1786), *P. laurae* Houart, 1997, *P. patagiatus* (Hedley, 1912) and *P. pellucidus* (Reeve, 1845) in having a broader shell with broader, round or roundly ovate aperture, a comparatively narrower siphonal canal, a lower, broader spire and a trivaricate shell starting from first teleoconch whorl rather then from second or third whorl in *Pterynotus*.

Chicopinnatus species differ further from *Timbellus* species in having a broader shell with broader, more rounded aperture but mainly in having a squamous shell compared to the smooth, or almost smooth shell in *Timbellus*.

A molecular phylogenetic study of the whole group is necessary to test this new classification.

***Chicoreus (Chicopinnatus) arbaguil* new species**
(Figures 3, 17–25, 34)

Description: Shell large for the subgenus, up to 85.9 mm in length at maturity (paratype MNHN IM-2013-14446). Length/width ratio 1.21–1.51. Biconical, broadly ovate, heavy, strongly spinose, nodose. Subsutural ramp narrow, weakly sloping, convex. Light brown or tan, occasionally with light purplish spinose fronds (holotype). Primary and secondary cords lightly darker colored. Apertural side of siphonal canal lighter colored. Aperture white. Spire high with 2 protoconch whorls and teleoconch up to 8 broad, weakly shouldered, spinose and nodose whorls. Suture impressed. Protoconch small, weakly flattened, with rounded whorls. Last whorl minutely punctate, with a narrow, strong keel abapically. Width 1300 µm, height 1100 µm (paratype MNHN IM-2000-30344). Terminal lip almost straight, partly eroded. Axial sculpture of teleoconch whorls consisting of high, narrow, rounded, nodose varices. Each varix with long, acute, open, webbed, primary, secondary and tertiary spines. Shoulder spine longest. P1–P3 and P4-s6 spines joined by thin webbing. Other axial sculpture of high, strong, rounded intervariceal ribs. First teleoconch whorl already starting 3 small, rounded varices with 2 or 3 intervariceal narrow ribs; second whorl with intervariceal ribs becoming broader. Three varices and 2 or 3 broad, high, intervariceal ribs from fourth to last whorl. Spiral sculpture of high, narrow, squamous and nodose primary, secondary and tertiary cords and few, nodose, narrow threads. First whorl with visible P1–P4; second whorl starting IP; third and fourth with adis, IP, P1, P2, P3, s3, P4; fifth with adis, IP, abis, P1, P2, P3, s3, P4, starting additional threads; seventh whorl of subadult paratype MNHN IM-2000-30344 with adis, IP, abis and 2 additional threads on subsutural ramp, followed by P1, P2, P3, s3, P4, s4, P5, s5, P6, s6, tertiary cords and few threads. Siphonal canal with strongly backward curved ADP, straight MP and ABP. P1 and P2 spines joined by thin webbing from third to last whorl, including P3 spine from fifth to last whorl. S3 not joined to other spines. P4 to s6 spines webbed. Adult shell with 8 teleoconch whorls having similar shell sculpture morphology. Aperture large, broadly ovate. Columellar lip narrow, smooth, with low parietal tooth at adapical extremity. Rim adherent at adapical extremity, weakly erect abapically. Anal notch shallow, broad. Outer lip erect, crenulated, with strong, low, narrow lirae within: IP split, D1, D2–D7 occasionally split. Siphonal canal long, narrow, lightly



Figures 17–25. ***Chicoreus* (*Chicopinnatus*) *arbaguil* new species. 17–19.** Papua New Guinea, PAPUA NIUGINI, stn PP06, Rempi area, east of Tadwai Island, 145°48′ E, 04°59′ S, 180 m, holotype MNHN IM-2013-14388, 83.3 mm. **20–21.** stn PP07, Rempi area, east of Tadwai Island, 145°48′ E, 04°59′ S, 150 m, paratype MNHN IM-2013-14446, 85.9 mm. **22–23.** Madang Lagoon, no other data, paratype MNHN IM-2000-30344, 44.1 mm. **24.** Protoconch (paratype MNHN IM-2000-30344), scale bar 500 µm. **25.** Operculum (holotype IM-2013-14388), scale bar 500 µm.

abaxially bent, weakly dorsally recurved at tip, narrowly open, with 3 or 4 acute spines: ADP, MP, ABP, (abs), decreasing in length abapically. Operculum dark brown, broadly ovate, with subapical nucleus and 13 concentric ridges. Attached surface with many growth lines and broad, callused rim. Radula unknown.

Type Material: Holotype MNHN IM-2013-14388 (lv) and 3 paratypes MNHN, 1 coll. RH (as listed below).

Material Examined: Papua New Guinea: PAPUA NIUGINI, stn PP06, Rempi area, east of Tadwai Island, 145°48′ E, 04°59′ S, 180 m, 19 November 2012, 1 lv (holotype IM-2013-14388); stn PP07, Rempi area, east of Tadwai Island, 145°48′ E, 04°59′ S, 150 m, 20 November 2012, 1 lv (paratype MNHN IM-2013-14446); Madang Lagoon, November–December 2012, no other data, 2 paratypes MNHN IM-2000-30344 (1 lv, 1 dd, juv), 1 paratype RH (dd).

Type Locality: Papua New Guinea, Rempi area, east of Tadwai Island, living at 180 m.

Distribution: Papua New Guinea: Rempi area, east of Tadwai Island, living at 150–180 m and Madang Lagoon, no other data.

Remarks: *Chicoreus* (*Chicopinnatus*) *arbaguil* differs from *C. brianbaileyi* (Figures 36–43) in having a larger, more elongate shell with a same number of teleoconch whorls, a comparatively larger and broader aperture, and less expanded variceal wings with longer spines. It also has a comparatively higher spire and a longer siphonal canal with more broadly spaced spiral cords. The distance between P4 and ADP is more reduced with less webbed wings and narrower spiral cords. The protoconch (Figure 24) is smaller with broader first whorl and a strongly keeled last whorl compared to the broader, smooth protoconch of *C. brianbaileyi* (Figure 43).

Chicoreus (*Chicopinnatus*) *arbaguil* differs from *C. miyokoae* (Figures 44–46) in having a more elongate and larger shell with a same number of teleoconch whorls, more broadly spaced spiral cords, and broader primary cords. The spire is higher, the siphonal canal longer and the ADP, MP and ABP cords are not webbed like in *C. miyokoae*. The aperture is comparatively larger. The variceal spines are longer, straight and not short, strongly webbed and adaperturally recurved as in *C. miyokoae*. The protoconch is almost twice as wide with a strongly keeled last whorl while it is small and smooth in *C. miyokoae* (Figure 46).

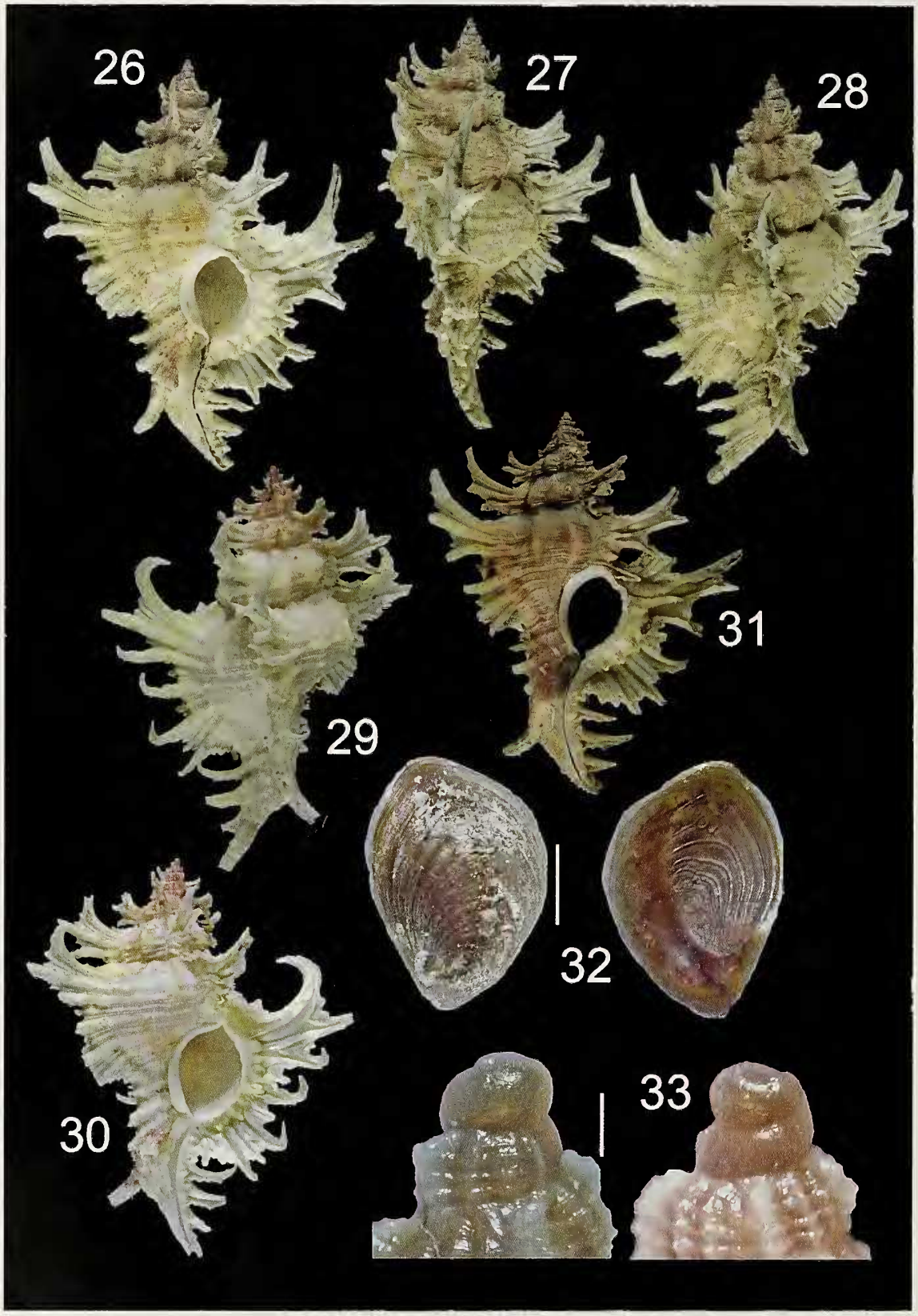
Chicoreus (*Chicopinnatus*) *arbaguil* differs from *C. loebbeckei* (Figures 47–48) by the same characters separating it from *C. miyokoae*. *Chicoreus* (*Chicopinnatus*) *arbaguil* differs further in having lecithotrophic larval development, as attested by the paucispiral, rounded protoconch, rather than planktotrophic development as in *C. loebbeckei*, which has a conical protoconch of more than three whorls with a narrow keel abapically and a terminal lip of sinusigera type (Figure 48).

Etymology: This new *Chicoreus* is named after Jo Arbasto and Noel Saguil who, during the Madang expedition, operated the tangle nets that led to its discovery. Jo Arbasto is a professional tangle net fisherman on the island of Panglao, in the Philippines, and Noel Saguil has been a project officer working for biodiversity projects, also in the Philippines. Both contributed immensely to the success of MNHN expeditions, notably the Panglao and Aurora expeditions in the Philippines, Santo 2006 in Vanuatu, and now the Papua New Guinea Madang 2012 expedition. The word *arbaguil* is used as a noun in apposition.

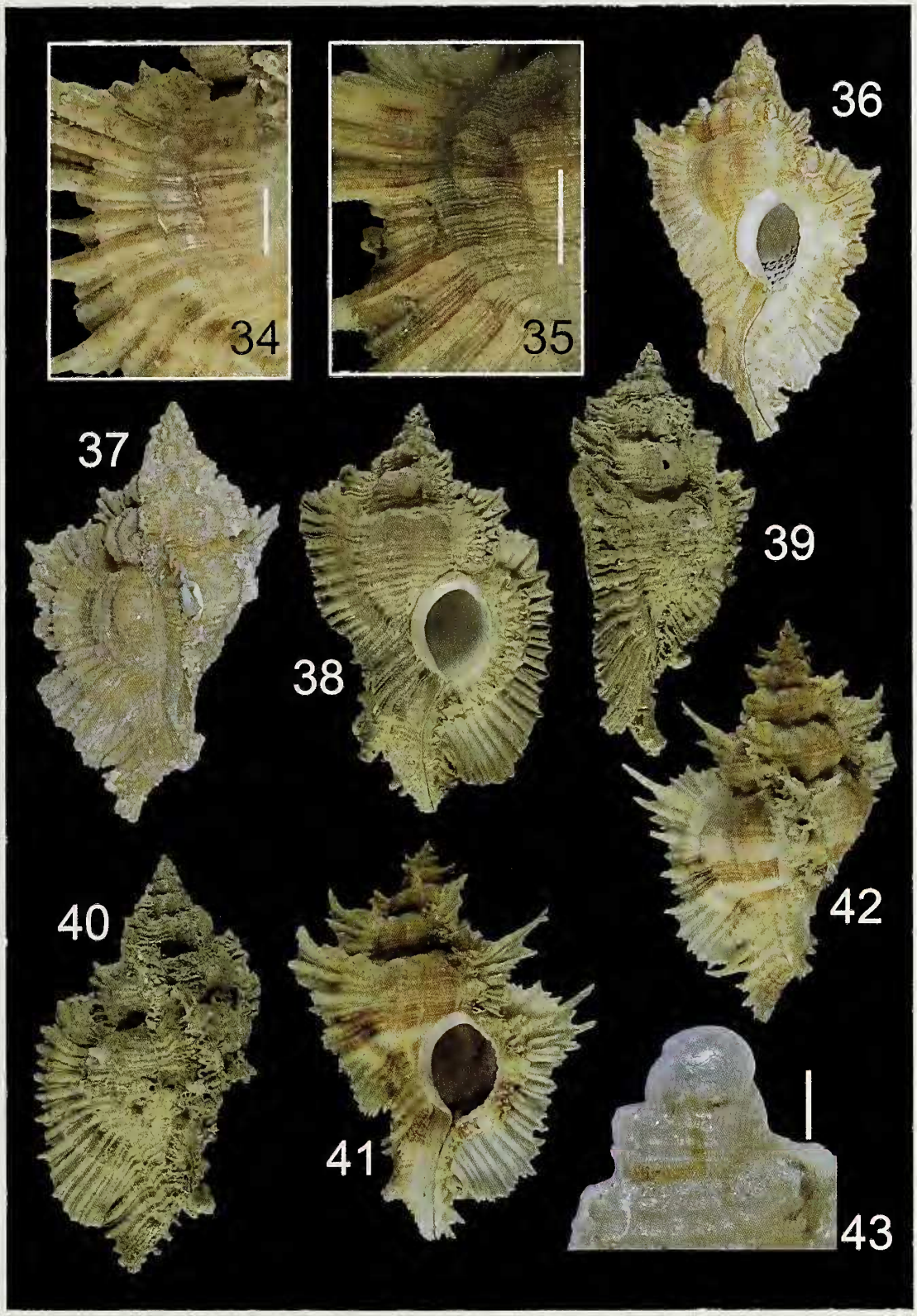
***Chicoreus (Chicopinnatus) dharmai* new species**
(Figures 4, 26–33, 35)

Pterynotus brianbaileyi.—Dharma, 2005: 164, pl. 57, fig. 14 (not *Pterynotus brinbaileyi* Mühlhäusser, 1984).

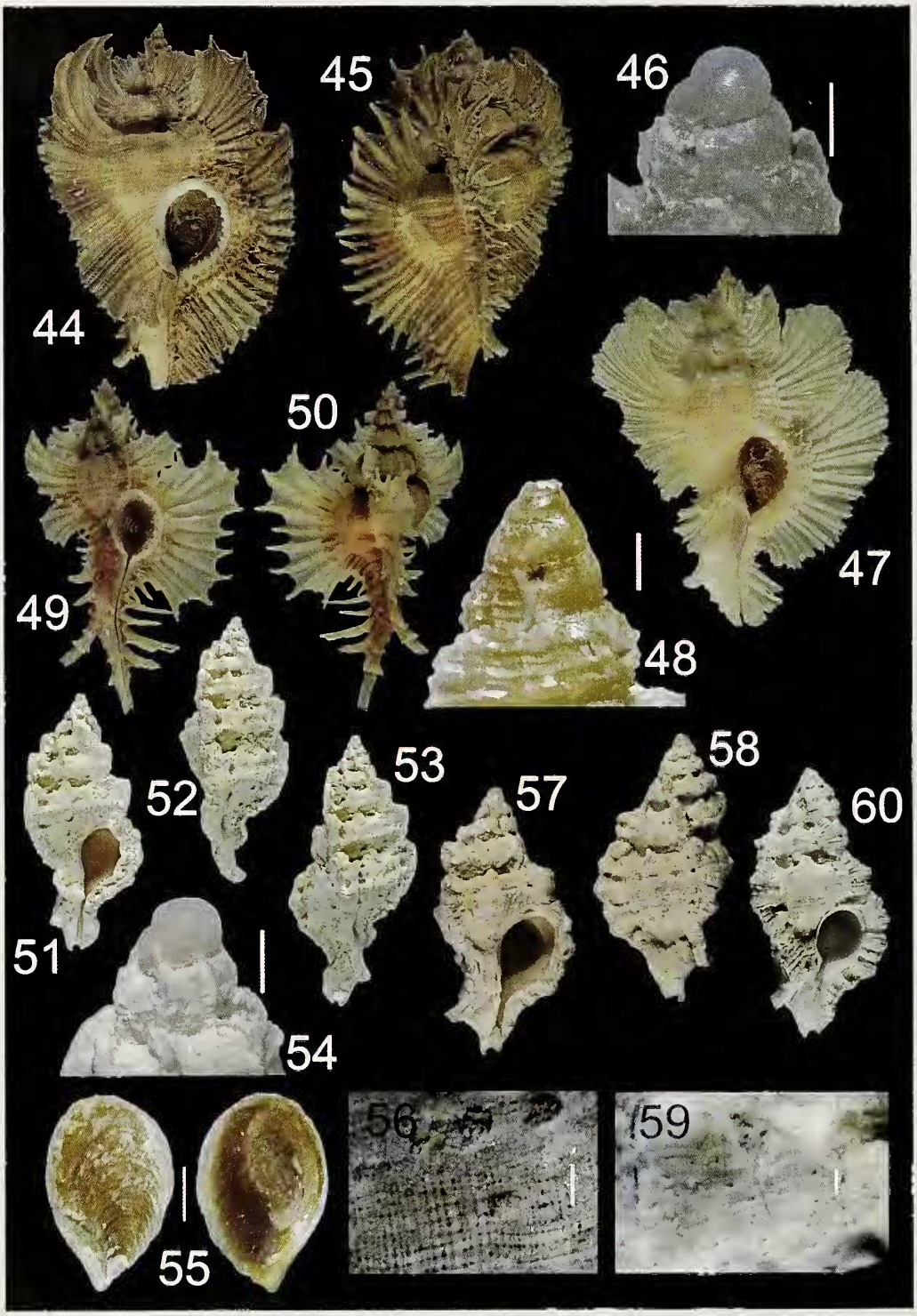
Description: Shell large for the subgenus, up to 74.6 mm in length at maturity (holotype). Length/width ratio 1.25–1.26. Biconical, broad, heavy, spinose and nodose. Subsutural ramp broad, weakly sloping and convex. White or light tan with pinkish or brown protoconch and 2 or 3 first teleoconch whorls. Primary, or primary and secondary cords topped with narrow brown line. Aperture white. Spire high with 2 protoconch whorls and teleoconch up to 8 broad, weakly shouldered, spinose and nodose whorls. Suture impressed. Protoconch small, whorls rounded, smooth. Maximum height and width 1300 µm. Terminal lip almost straight, partly eroded. Axial sculpture of teleoconch whorls consisting of high, narrow, rounded, nodose varices. Each varix with long, broad, open, webbed, primary and short secondary spines. Shoulder spine longest. P1–P3 and P4–s6 spines joined by thin webbing. First whorl already starting 3 small, rounded varices with 2 or 3 nodose intervariceal ribs; third whorl with broader ribs. Fourth to last whorl with 2 broad, high, intervariceal ribs. Spiral sculpture of low, narrow, nodose, primary, secondary and tertiary cords and numerous nodose threads. First whorl with visible IP, P1–P4; second with IP, P1, P2, P3, s3, P4; third whorl starting spiral threads; fourth to penultimate whorl with visible adis, IP, abis, P1, P2, P3, s3, P4. Last whorl with adis, IP, abis, P1, P2, s2, P3, s3, P4, s4, P5, s5, P6, s6, two additional tertiary cords and numerous spiral threads over whole shell. Siphonal canal with almost straight or straight ADP, MP and ABP. P1 and P3 spines webbed from second to last whorl; P4 to s6 spines webbed. S3 not joined by webbing to other spines. Aperture large, broadly ovate. Columellar lip narrow, smooth, with low parietal tooth at adapical extremity. Rim adherent at adapical extremity, weakly erect abapically. Anal notch shallow, broad. Outer lip erect, crenulated, with strong, low, narrow lirae within: IP split, D1, D2–D7 occasionally split. Siphonal canal long, narrow, lightly bent abaxially, weakly dorsally recurved at tip, narrowly open, with 3 acute, straight or almost straight spines: ADP, MP, ABP, decreasing in length abapically. Operculum dark brown, broadly ovate, with subapical nucleus and 17 concentric ridges (paratype B, Dharma).



Figures 26–33. ***Chicoreus* (*Chicopinnatus*) *dharmai* new species. 26–28.** Indonesia, East Java, Bamyuwangi-Jember, 146 m, in lobster nets, holotype MZB Gst. 18174, 74.5 mm. **29–30.** Lombok Island, in lobster net, +/– 91 m, paratype RH, 67.3 mm. **31.** East Java, Munear, 165 m, in lobster nets, paratype B. Dharma, 65.8 mm. **32.** Operculum (paratype B. Dharma), scale bar 500 µm. **33.** Protoconch (paratype RH), scale bar 500 µm.



Figures 34–43. Species of *Chicoreus*. 34–35. Spiral sculpture (scale bar 5 mm). **34.** ***Chicoreus* (*Chicopinnatus*) *arbaguil* new species,** holotype MNHN-IM-2013-14388. **35.** ***Chicoreus* (*Chicopinnatus*) *dharmai* new species,** paratype RH. **36–43.** *Chicoreus* (*Chicopinnatus*) *brianbaileyi* (Mühlhäusser, 1984). 36–37. Russell Island, Solomon Islands, holotype ZSM 1746, 74 mm (photo E. Schwabe). **38–40.** Solomon Islands, SALOMONBOA3, stn DW2855, 9°45′ S, 160°50′ E, 183 m, MNHN IM-2009-5858, 67.2 mm. **41–42.** Vanuatu, MUSORSTOM 8, stn CP1071, 15°37′ S, 167°16′ E, 180–191 m, MNHN-IM-2012-18002, 62.6 mm. **43.** Protoconch, scale bar 500 µm.



Figures 44–60. Species of *Chicoreus* and *Dermomurex*. **44–46.** *Chicoreus* (*Chicopinnatus*) *miyokoae* (Kosuge, 1979). **44–45.** Philippines, Samal, Ligid Island, 58.5 mm, RH. **46.** Protoconch. Philippines, Davao, RH, scale bar 500 µm. **47–48.** *Chicoreus* (*Chicopinnatus*) *loebbeckei* (Kobelt, 1879), Philippines, Davao, Samal Island, 53.6 mm. RH. **48.** Protoconch, scale bar 500 µm. **49–50.** *Chicoreus* (*Chicopinnatus*) *orchidiflorus* (Shikama, 1972), Philippines, Bohol, Caubian Island, 130 m, RH, 41.6 mm. **51–56.** ***Dermomurex fitialeatai* new species. 51–53.** Papua New Guinea, north of Tadwai Island, outer slope, 145°47,7′E, 04°59,1′S, 22 m, holotype MNHN IM-2013-14300, 18.9 mm. **54.** Protoconch (holotype), scale bar 500 µm. **55.** Operculum (holotype), scale bar 1 mm. **56.** Detail of the intritacalx (holotype), scale bar 1 mm. **57–59.** *Dermomurex triclotae* Houart, 2001. **57–58.** New Caledonia, channel of Koumac pass, 20°40.7′ S, 164°14.7′ E, holotype MNHN-IM-2000-0340, 13.10 mm (photo MNHN). **59.** Detail of the intritacalx (paratype RH), scale bar 1 mm. **60.** *Dermomurex trondleorum* Houart, 1990, French Polynesia, Tuamotu Archipelago, Anaa Atoll, holotype MNHN-IM-2000-0223, 17 mm (photo MNHN).

Attached surface with many growth lines and broad, callused rim. Radula unknown.

Type Material: Holotype MZB Gst. 18174, 1 paratype B. Dharma; 1 paratype collection RH (as listed below).

Material Examined: Indonesia: East Java, Bamyuwangi-Jember, 146 m, in lobster net, January 2014, 1 dd (holotype MZB); East Java, Muncar, 165 m, in lobster net, 1 lv (paratype coll. B. Dharma); Lombok Island, in lobster net, about 90 m, 2005, 1 dd (paratype coll. RH).

Type Locality: Indonesia, East Java, Bamyuwangi-Jember, 146 m, in lobster nets.

Distribution: Indonesia, east of Java and Lombok Island, living at 165m.

Remarks: *Chicoreus* (*Chicopinnatus*) *dharmai* is similar to *C. arbaguil* but differs in protoconch and other shell morphology. The protoconch is comparatively larger, higher and smooth rather than flatter and having a strongly keeled last whorl in *C. arbaguil*. The sculpture of the teleoconch is also similar but the spiral cords are narrower in *C. dharmai*, and the spiral threads are more numerous (Figures 34–35), IP starts from first teleoconch whorl rather than the second and the space between cords P4 and s6 is distinctly narrower (Figures 3–4). The shell is also stockier than *C. arbaguil*, smaller for a same number of teleoconch whorls, and has a lower spire and a notably shorter siphonal canal with straight rather than strongly backward curved ADP spine.

Chicoreus (*Chicopinnatus*) *dharmai* differs from the other more or less similar species, *C. brianbaileyi*, *C. miyokoae* and *C. loebbeckei* in having more strongly spinose axial varices, lower and narrower intervariceal nodes, less numerous, narrower secondary spiral cords and a comparatively narrower and longer siphonal canal.

I earlier misidentified a specimen of *C. dharmai* as *C. brianbaileyi* whieh was thus identified as such by Dharma (2005).

Etymology: This species is named for Bunjamin Dharma, who kindly donated the holotype and in acknowledgment for more than 20 years of useful collaboration.

Genus *Dermomurex* Monterosato, 1890

Type Species: *Murex scalarinus* Bivona-Bernardi, 1832 (= *Murex scalaroides* Blainville, 1829), Mediterranean Sea and Eastern Atlantic (Senegal) (original designation).

Remarks: There are currently fifteen Recent Indo-West Pacific species assigned to *Dermomurex* Monterosato, 1890. Six belong in *Dermomurex* sensu stricto: *D. agnesae* Vokes, 1995, *D. angustus* (Verco, 1895), *D. charlesi* Houart and Héros, 2013, D. *goldsteini* (Tenison Woods, 1876), *D. neglecta* (Habe and Kosuge, 1971), and *D. raywalkeri* Houart, 1986; four in subgenus *Takia* Kuroda, 1953: *D. africanus* Vokes, 1978, *D. bobyini* Kosuge, 1984, *D. infrons* Vokes, 1974, and *D. wareni* Houart, 1990; two in subgenus *Trialatella* Berry, 1964: *D. triclotae* Houart, 2001 and *D. trondleorum* Houart, 1990; and three in subgenus *Viator* Vokes, 1974: *D. antonius* Vokes, 1974, *D. howletti* Vokes, 1995, and *D. pasi* Vokes, 1993.

A simple key to separate the subgenera of *Dermomurex* was given by Vokes (1985):

I. SPIRE SHORT	
A Six varices	
1. Moderate canal	*Takia*
2. Long, straight canal	*Viator*
B Three varices	*Trialatella*
II. SPIRE ELONGATE	
A Two varices	*Gracilimurex*
B Three to six varices	*Dermomurex* sensu stricto

Although the distinction between *Dermomurex* sensu stricto, *Dermomurex* (*Takia*), and *Dermomurex* (*Viator*) is clear, it is not readily apparent how to separate some species of *Dermomurex* sensu stricto from *Dermomurex* (*Trialatella*). For example, the species newly described here could be allocated into *Trialatella* because it has three axial varices per whorl from third to last teleoconch whorl, but the spire is elongate rather than short as in *Trialatella* and fits better in *Dermomurex* sensu stricto. Other representatives of uncertain relationship were recorded by Merle et al. (2011: 212–213), who also doubted the need for *Trialatella*. Therefore the decision was taken here to describe this new species without any subgeneric distinction.

***Dermomurex fitialeatai* new species**
(Figures 5, 51–56)

Description: Shell medium sized for the genus, 18.9 mm in length. Lentgh/width ratio 2.35. Slender, lanceolate, nodose, lightly built. Subsutural ramp narrow, weakly sloping and convex. Shell covered by thick, white, minutely reticulate intritacalx. Aperture bluish-white. Spire high with 1.5 protoconch whorls and 6.5 weakly convex, narrow, shouldered, nodose whorls. Suture impressed, partially obscured by small, narrow buttresses conneeting preceding whorl. Protoconch small. Whorls rounded, smooth, height 900 µm, width 800 µm. Terminal lip lightly erect, narrow, opisthocline. Axial sculpture of teleoconch whorls consisting of narrow lamellae and high, strong, narrow, rounded varices. First and second whorl with 6 axial lamellae; third whorl starting varices. Three rounded varices and one narrow, low, intervariceal node from fourth to last whorl. Spiral sculpture of low, rounded, broad, nodose, primary cords, visible from fourth to last whorl. Last whorl with P1–P6. P1, P2 and P3 broad, moderately high, more obvious when connecting axial varices, forming deep pits between P1 and P2 and P2 and P3. P4, P5 and P6 almost obsolete, probably more obvious when intritacalx removed. Siphonal canal with very low ADP, MP and ABP. Aperture small, ovate. Columellar lip narrow, smooth, adherent. Anal notch shallow, broad. Outer lip not fully adult, smooth within. Siphonal

canal short, narrow, dorsally bent at tip, open. Operculum dark brown, roundly ovate, inverted tear-shaped with apical nucleus and numerous concentric ridges. Attached surface with about 4 growth lines and very broad, large, callused rim. Radula unknown.

Type Material: Holotype MNHN IM-2013-14300 (lv).

Material Examined: Papua New Guinea: PAPUA NIUGINI, stn PB26, north of Tadwai Island, outer slope, 145°47,7′E, 04°59,1′S, 22 m, 22 November 2012 (holotype MNHN).

Type Locality: Papua New Guinea, north of Tadwai Island, outer slope, 145°47,7′ E, 04°59,1′ S, 22 m.

Distribution: Papua New Guinea, north of Tadwai Island, living at 22 m.

Remarks. *Dermomurex fitialeatai* new species can only be compared with *D. triclotae* Houart, 2001 from New Caledonia (see discussion under *Dermomurex*). It differs from all the other species in having a trivaricate shell whereas the other species from the Indo-West Pacific bear four to six varices.

Dermomurex trondleorum from French Polynesia also has a trivaricate shell but differs in many ways and does not need to be compared further here. It is only illustrated for reference (Figure 60).

Dermomurex fitialeatai new species differs from *D. triclotae* (Figures 57–59) in having a more elongate spire, 7 varices on first teleoconch whorl and 6 on second and third, while decreasing from 6 varices on first whorl to 3 on all the subsequent whorls in *D. triclotae*. The intritacalx also differs in being minutely reticulate in *D. fitialeatai* (Figure 56) and faintly striate in *D. triclotae* (Figure 59).

Etymology: The name of this species is dedicated to Christian Késiano Fitialeata, who tragically passed away during the first leg of BioPapua, another expedition to Papua New Guinea, which took place in 2010.

ACKNOWLEDGMENTS

I am grateful to Philippe Bouchet for giving me opportunity to study the material from the expeditions organized jointly by MNHN and IRD over many years and for his comments on the manuscript, to Enrico Schwabe (Bavarian State Collection of Zoology, München, Germany), for the digital images of the holotype of *Pterynotus brianbaileyi*, to Virginie Héros and Philippe Maestrati (Muséum national d'Histoire naturelle, Paris) for the loan of material and for other information, to Bunjamin Dharma for the donation of the holotype of *Chicoreus* (*Chicopinnatus*) *dharmai* new species and to Manuel Caballer (MNHN) who provided the images of the MNHN types, E-Recolnat Projeet: ANR-11-INBS-0004. Thanks also to John Wolff, Lancaster, Pennsylvania, USA, for checking the English text. I also thank Bruce Marshall (Museum of New Zealand, Te Papa Tongarewa, Wellington, New Zealand) and Marco Oliverio (University of Rome, Italy) for their careful review of the manuscript.

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